



# 406 MHz EPIRB False Alerts Study



# EPIRB False Alerts Study

Study was research project by:

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# Why does US Coast Guard care about EPIRB False Alerts?

- 96% 406 MHz EPIRB Alerts are false
- 85% Resolved by RCCs with registration and good detective work
- Projected increase in EPIRB population will bring increase in number of false alerts

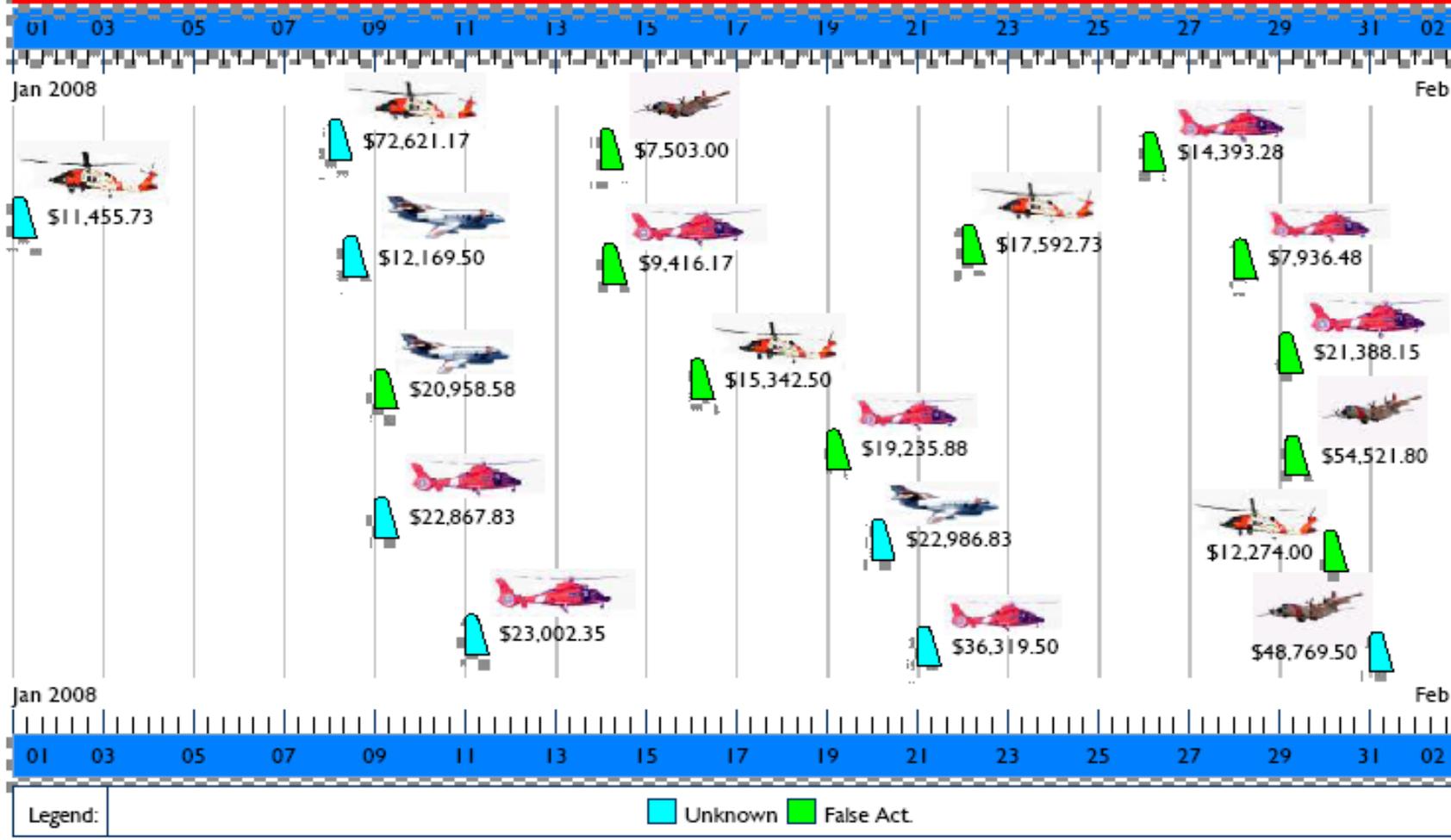


# Why does US Coast Guard care about EPIRB False Alerts?

- \$3.6 million in A/C time and fuel on 406 MHz EPIRB false alerts in 2007
- SAR crews put at risk
- SAR assets less available for actual distress
- Fatigues and dulls the SAR system



# Cost of Coast Guard A/C Sorties Searching for False 406 EPIRB Activations for the Month of January 2008 - \$427,889.15



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# EPIRB False Alerts Study

- Study data limited to:
  - US Registered 406 MHz EPIRBs
  - transmitting a 406 MHz False Alert
  - where secondary data collection was accomplished, through RCC telephone interview of vessels owner or operator at the time of the alert
- Study Population came from all USMCC alerts passed to US Coast Guard RCCs



# EPIRB False Alerts

- 1 May - 31 Dec 2007
- USMCC received **1577** 406 MHz EPIRB alerts
- 5% (83) were Distress Alerts
- **1494** False Alerts (non-distress and ceased/undetermined alerts)

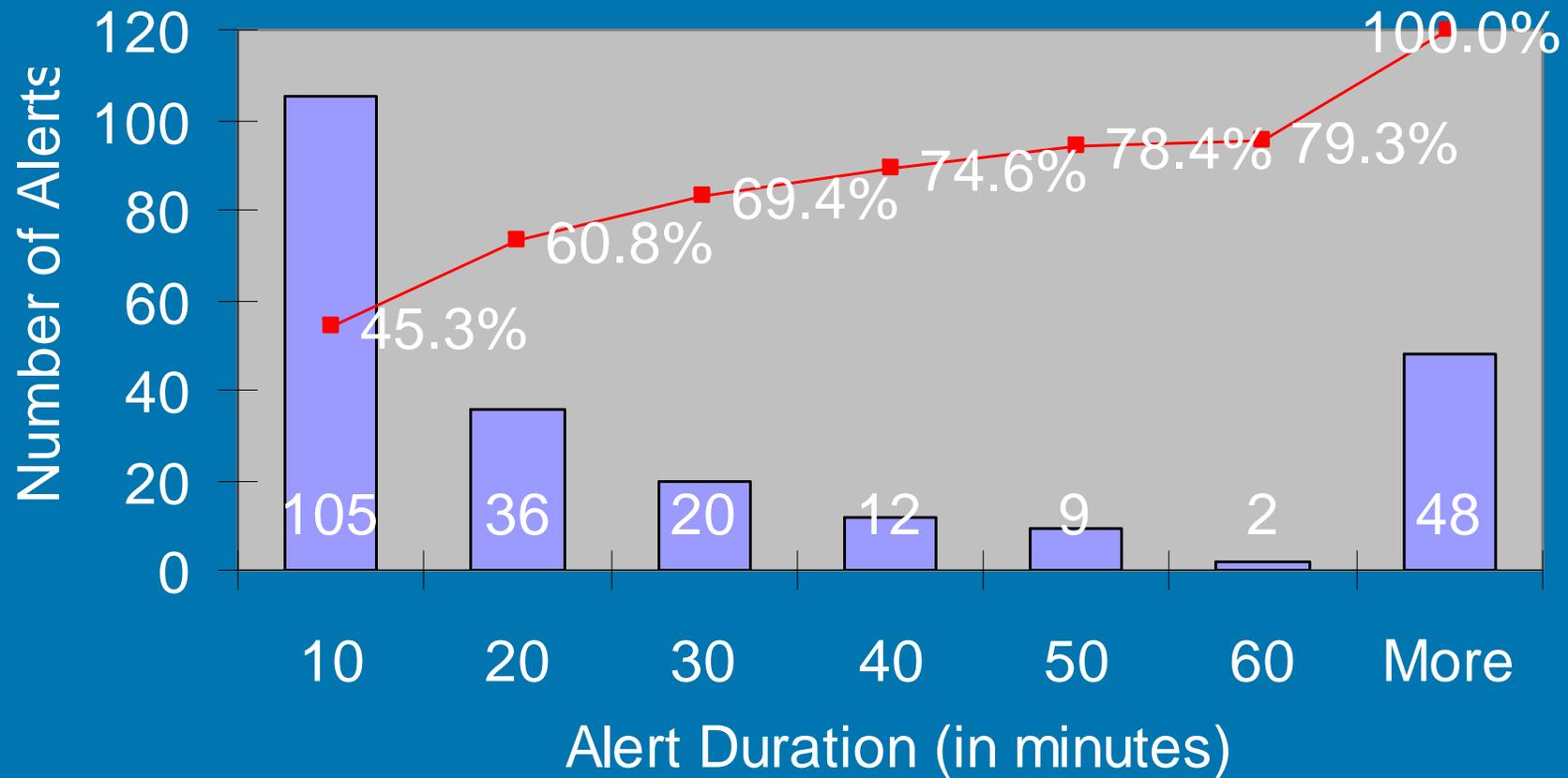


# EPIRB False Alerts

- 1494 False Alerts (non-distress and ceased/undetermined alerts)
- 15% - (232) Were False Alerts with enough data collected to develop evidence of circumstances causing alert transmission



# How Long does a False Alerts Last?



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# EPIRB False Alerts

- **232** - False Alerts with enough data collected to develop evidence of circumstances causing alert transmission

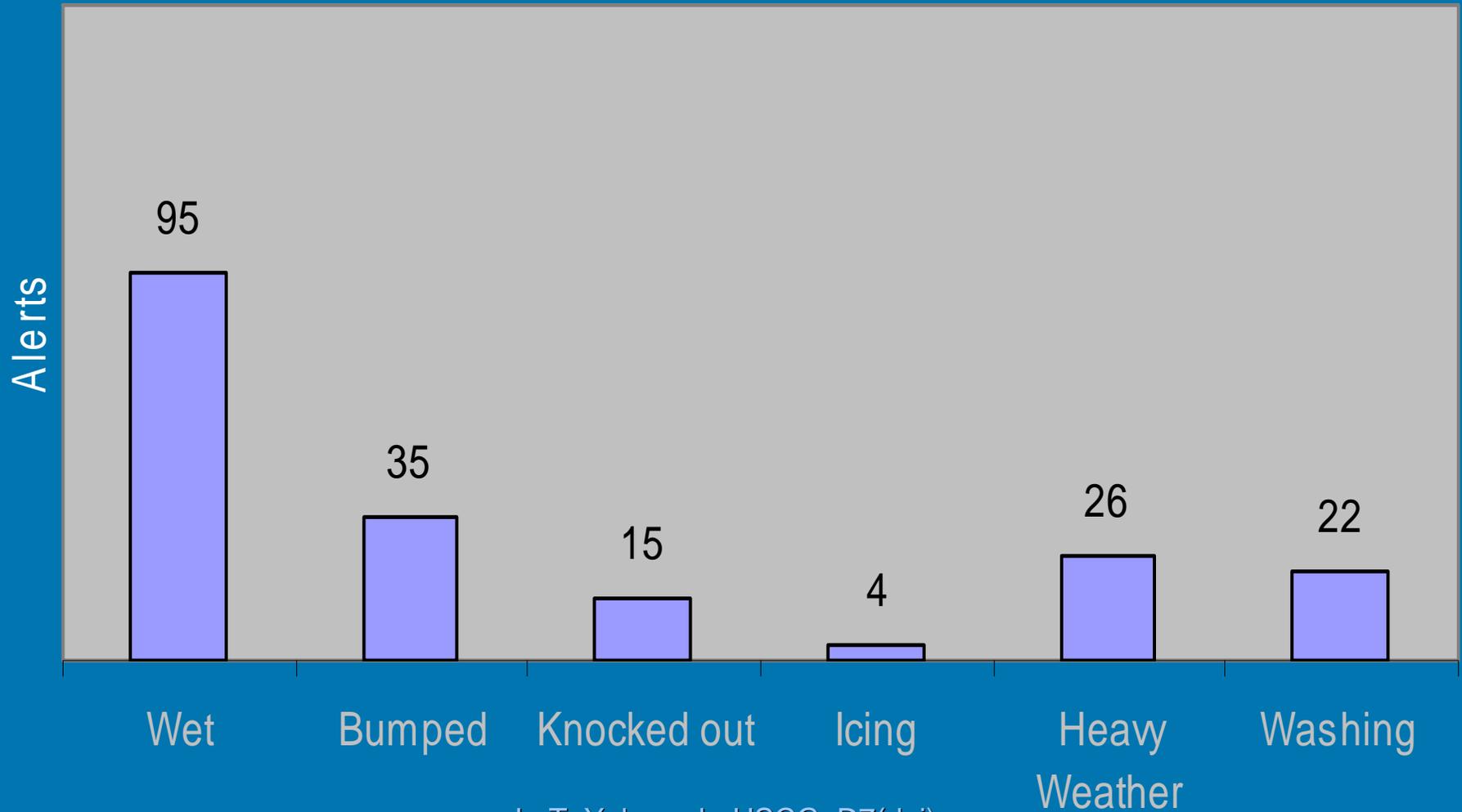


# Operator Induced False Alerts

- 10% (24) were attributed to **Testing** without following manufactures instructions, or other deliberate non-emergency activations
- 6% (13) were EPIRBs deliberately taken out of bracket and naked of any control of the wet sensor



# False Alert and EPIRB in Bracket



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# EPIRB False Alerts

69% (161) Caused by Failure of “The bracket decoupling function” to control the EPIRB

- Observed with Category I and II
- Manufactures, makes and models in the US registration data base were proportionally represented by False Alerts



# EPIRB False Alerts

69% (161) Activated when bracket should have prevented activation

Failure of “The bracket decoupling function” to control the EPIRB



# Bracket problems observed in field by Coast Guard personnel

- Loose straps or mechanical holding device
- Missing pads or guides to hold beacons in place
- Missing or corroded magnets



# Bracket problems observed in field by Coast Guard personal (continued)

- Beacons being placed improperly in brackets by users
- Brackets not mounted in accordance with manufactures recommendations



# RTCM Standard 11000.2

## 2.3.1.1

“The satellite EPIRB should **not** be accidentally activated or deactivated by conditions normally encountered in the maritime environment.”



# RTCM Standard 11000.2

## 2.3.1.2

“The bracket decoupling function will guard against false alarms should the water-activation mechanism malfunction to an “on” mode. It will also prevent inadvertent activation due to the water activation mechanism becoming wet due to heavy seas or rain. ... Both Category 1 and Category 2 satellite EPIRBs should have these features.”



# EPIRB Operational Requirements

**Not be activated or deactivated by conditions encountered in maritime environment**

**69% Of  
False Alerts**

**Bracket  
Interface Failure**



# Bracket Decoupling Function

The current RTCM standard is adequate for describing the functional requirement for the design and construction of EPIRBs



# Bracket Decoupling Function

The testing requirements in Appendix A need to be examined for adequacy for testing the Bracket Decoupling Function and Ergonomic design of an EPIRB



# EPIRB as a System

Current Shore Based Maintenance for EPIRBs does not routinely examine the Bracket, (IMO MSC/Circ.1039)

Require or at least encourage the bracket to be included in an EPIRB service



# EPIRB Testing

IMO MSC/Circ.1040, Guidelines on Annual Testing of 406 MHz Satellite EPIRBs, and manufacture's self test guidelines should be reassessed for detection of bracket failure



# Naked EPIRBs

Recreational mariners are buying EPIRBs and putting them in their “ditch bags” without brackets that provide protection for the wet activation circuit

Develop a design standard that incorporates the bracket decoupling function for this type of EPIRB user



# Feedback

- Improve feedback mechanism to Beacon manufactures that provides as much detail as possible about:
  - exactly which Beacons have generated a False Alert. And
  - circumstances surrounding the event.
  - Consider providing IHDB access, or a limited and redacted version that excludes protected personal data.



# False Alerts

False Alerts are a drain on the health of the EPIRB Distress Alerting System

There is no one cause of EPIRB False Alerts, and there is no one fix for the problem However ...

Several small corrective steps will make a positive difference in this problem



# Questions?

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